



COMMAND AND CONTROL RESOURCES AND REQUIREMENTS

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The [commander, Air Force forces](#) (COMAFFOR) uses the following command and control (C2) resources to conduct and support counterair operations:

Theater Air Control System

The theater air control system (TACS) provides the COMAFFOR with an overarching means of commanding and controlling counterair operations. It includes the personnel, procedures, and equipment, such as the [air operations center](#) (AOC), necessary to plan, direct, control, and assess air operations and to coordinate those operations with other components. It is composed of units and communications nodes to allow centralized control and decentralized execution of air operations. The TACS can be tailored to support contingencies of any size across the range of military operations. TACS elements may be employed in garrison, deployed for contingencies, or deployed to augment theater-specific systems. When the TACS is combined with other Service or functional components' C2 elements (such as the Army air-ground system, the Navy tactical air control system, the Marine Corps air command and control system, or the special operations air ground system) it becomes the TAGS.

The TACS is divided into ground and airborne elements, based on the environment in which they operate, not on the portion of the operations for which they provide C2. For a more detailed examination of each element of the TACS, see Annex 3-52, *Airspace Control*, AFTTP 3-1, Vol. 26, *Theater Air Control System*, and AFTTP 3-2.17.

Air Operations Center

The AOC is the senior element of the TACS and is the principal air operations weapons system with which combat air operations are designed, planned, directed, controlled, and assessed. Additionally, the AOC coordinates air operations with other Services and components. The AOC disseminates tasking orders, executes day-to-day peacetime and combat air, space, and cyberspace operations, provides rapid reaction to immediate situations by exercising positive control of friendly forces, and provides the capability to conduct dynamic targeting, including the prosecution of time-sensitive targets. When the COMAFFOR is appointed J/CFACC, then the AOC becomes the core of the J/CAOC. Within the AOC, the airspace control management team integrates

the use of airspace in the theater. It provides the current air and surface situation using data from many sources and is responsible to the ACA for developing airspace control procedures through the ACP and coordinating airspace control activities. The AOC ensures that the ACP is compatible with current operational requirements and capabilities and relies on the ACP to ensure missions are de-conflicted.

The AOC may perform certain airspace management and airspace control functions directly, or may delegate them to the control and reporting center (CRC) or other tactical C2 agencies. Among the roles that the AOC may perform directly include data link management among all components and participating nations (vital for CID and air battle management) as well as management of the overall air defense effort. It may also perform C2 liaison, mission control, combat search and rescue (CSAR) assistance, threat warning, and coordination of air defense artillery and friendly artillery fire if it does not delegate these functions to the CRC or other tactical C2 elements.

TACS Ground Elements

Control and Reporting Center

As part of the TACS ground element, the CRC is the airspace control and surveillance radar facility directly subordinate to the AOC. It provides theater mission control through employment of C2 elements of the TACS. The CRC is assigned an airspace control sector by the AOC. It manages and directs activities of all deployed Air Force surface radars within that sector.

The CRC's primary mission is to provide airspace management and airspace control, including air traffic detection, tracking, and identification. The CRC also issues scramble or airborne orders; performs some data link management functions, and manages air defense activities within its sector. Additionally, the CRC provides C2 liaison, mission control, navigational assistance to CSAR efforts, aircraft threat warning, and coordination with air defense artillery fire direction centers and the friendly artillery warning service, although in some cases, these functions may be performed directly by the AOC. The CRC may further delegate control of surveillance areas to subordinate radar units or airborne warning and control system (AWACS) aircraft within its sector for optimum radar and radio coverage and air battle management.

Within the TACS, the CRC communicates up to the AOC, down to subordinate units, and laterally to other TACS/joint/coalition units to ensure defensive assets are employed in mutually supporting roles within its assigned sector. The CRC battle staff directs fighter aircraft, air defense artillery, and other counterair assets. The CRC battle commander, acting as a RADC or SADC, normally establishes operating procedures for initial assignment of airborne targets to air defense artillery and fighters. All air defense elements coordinate continuously with air defense artillery fire coordination units to eliminate duplication of efforts and ensure adequate commitment of assigned weapons against threats. Execution authority for air defensive systems may be provided to the

CRC as part of the RADC/SADC responsibilities. Given a constrained CID environment, the CRC may be the lowest tactical level that possesses engagement authority for enemy air threats.

Air Support Operations Center (ASOC)

As part of the TACS ground element, the ASOC is the functional air component responsible for planning, coordinating, controlling, and executing air operations that directly support ground combat forces. The ASOC can affect the counterair battle through coordination for [suppression of enemy air defense](#) (SEAD) missions, management of some airspace control measures, and others. The ASOC is usually collocated with the senior Army tactical echelon and coordinates operations with the permanently assigned tactical air control party, Army fires cell, and the AOC.

TACS Airborne Elements

Airborne Warning and Control System

The AWACS provides the TACS with a flexible and capable airborne radar platform. It provides an initial battle management function as well as command and control capability and is normally among the first systems to arrive in theater during contingency operations. Through voice and data connectivity, AWACS issues air defense warning, directs aircraft on counterair missions, manages air refueling, provides an air picture to air defense forces, assists with navigation, and coordinates CSAR efforts. AWACS can detect and identify hostile airborne and surface-to-air missile (SAM) threats and assign weapon systems to engage enemy targets.

AWACS may carry an airborne battle staff or airborne command element (ACE) authorized to redirect forces under the authority of the JFACC. When employed with an ACE, AWACS can scramble and divert aircraft conducting counterair operations and recommend changes in air defense warning conditions. The AWACS can perform many, but not all, CRC functions.

Joint Surveillance Target Attack Radar System (JSTARS)

The JSTARS is a long-range, airborne sensor system that provides real-time radar surveillance information on moving and stationary surface targets via secure data links to air and surface commanders. JSTARS can play an important role in the effort to gain control of the air. When combined with other ISR sensors, JSTARS contributes to the commander's overall situational awareness by identifying and locating such targets as SAM missiles, launchers, and radars and anti-aircraft artillery (AAA) sites, among others. The system has expanded into an integral part of the TACS. JSTARS provides updates on enemy force disposition and performs limited battle management functions, which may be important in managing the OCA effort. JSTARS information builds situational

awareness for the JFC and JFACC to manage air operations, to update target information, and to provide real-time dynamic targeting.



**AWACS, JSTARS, and RIVET JOINT provide C2 and
ISR information to the TACS and other users**

ISR Systems

Although not specifically part of the TACS, spaced-based and airborne ISR systems (both manned and UAS) are key enablers of counterair operations, (e.g., SEAD). For example, RIVET JOINT (an airborne signals intelligence collection and reporting platform) can provide near-real-time assessment of hostile airborne, land, and sea-based electronic emitters via secure communications directly to the AOC and the cockpit of aircraft conducting OCA operations. In addition, the U-2, MQ-1 (Predator), MQ-9 (Reaper) and RQ-4 (Global Hawk) provide near-real-time streaming video and still images of enemy air defense systems (e.g., SAM sites) to help determine status for attacking OCA assets and may, in the case of some armed UAS platforms, perform direct attack OCA missions.
